REMARKS

In the November 16, 2007 Office Action, the Examiner maintains the same rejections over prior art, i.e. claims 1-3, 7-13 and 17-23 are allegedly anticipated under 35 U.S.C. § 102(b) as being U.S. Patent No. 6,311,386 to Giardino et al., claims 4-6, 14-16 and 24-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Giardino et al., and adds a rejection of claims 1-26 under 35 U.S.C. § 112, second paragraph, for indefiniteness. Each rejection is addressed in detail below.

Claim Rejections - 35 U.S.C. § 112

Claims 1-26 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Specifically, the Examiner asserts that the phrase "by selecting one mathematical expression from a set of mathematical expressions and selecting at least one parameter that describes the torque pulse from a set of parameters" is indefinite because it is allegedly unclear the number of mathematical expressions from which to select.

The Examiner's rejection under 35 U.S.C. § 112, second paragraph, mistakes breadth for indefiniteness. Claim 1 recites, in relevant part, the step of "fitting an equation ... by selecting one mathematical expression from a *set* of mathematical expressions and selecting at least one parameter ... from a *set* of parameters." That language makes clear that one equation is selected from a set of mathematical expressions, and that one parameter is selected from a set of parameters. Although the term "set" may be broad, breadth is not indefiniteness. In re Miller, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). The term "plurality" and is often used in claim

language to define more than one of a particular element, and that term is clearly definite. One of ordinary skill in the art would understand that the terms "plurality" and "set" are synonymous and that the claimed invention recites selecting an equation from more than one mathematical expressions and selecting a single parameter from more than one parameter.

Because the term "set" is definite, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, second paragraph.

Claim Rejections - 35 U.S.C. 102(b)

Claims 1-3, 7-13 and 17-23 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated U.S. Patent No. 6,311,386 to Giardino et al. Giardino et al. is interpreted as disclosing applying a torque pulse to a fastener; detecting a signal representing the time-amplitude waveform of the pulse; fitting an equation that approximates the time amplitude waveform, processing the equation; comparing the torque to a pre-set torque objective; and applying a second torque. The Examiner admits that Giardino et al. does not expressly teach selecting one mathematical expression from a set of mathematical expressions that approximates the time-amplitude waveform, as recited in the claimed invention. Nonetheless, the Examiner suggests without basis that the method of Giardino et al. is "capable of having different preprogrammed sets of mathematical torque expressions."

Applicants submit that a prima facie case of anticipation has not been established because the step of fitting an equation that approximates the time-amplitude waveform of the torque pulse by selecting a mathematical expression from a set of mathematical expressions, as recited in independent claims 1, 11 and 21, is not identically found in Giardino et al. The claimed

invention not only requires multiple expressions, but also requires the ability to select one expression from the multiple expressions.

Giardino et al. teaches using only a single predetermined equation (col. 4, line 11) when determining torque, and not one selected from a group of equations. The data from the sensor 30 of the Giardino et al. controller is, in every instance, used in the single predetermined equation to determine torque. More specifically, the equation used is the impact pulse I defined as the integral of the pulse waveform, as described in col. 3, lines 60-63 and col. 4, lines 7-19. Thus, torque is always determined by the formula T-(Ir)/dt (col. 4, line 40) and impulse I is always calculated as $I = \int Fdt$ (col. 4, line 11). In other words, the equation taught by Giardino et al. for the impulse I is not selected from set of mathematical expressions, as recited in the claimed invention, because the same equation for determining impulse I is always used, and thus there is no set of mathematical expressions. Thus, Giardino et al. assumes that all of the information required to accurately determine torque is contained within an single equation, that is the integral of the pulse waveform, and does not account for variations in fastener tightness, distortion in the torque to magnetic field or magnetic field to electrical signal. Therefore, Giardino et al. teaches neither multiple mathematical expressions nor the ability to select one expression from the multiple mathematical expression. Thus, if the threaded joint that the tool of Giardino et al is tightening is unique in some way, that renders the torque equation of Giardino et al. inappropriate, and its output inaccurate, such that the joint will not be properly tightened.

In contrast, the claimed invention accounts for variations in threaded fastening operations, and fits, or adjusts, the equations accordingly. As described in Applicants' specification at page 10, lines 17-20 and page 11, line 19 – page 14, line 13, the equation used in

the claimed invention is selected from a number of possible equations or mathematical expressions using a curve fitting function to determine the most appropriate expression. That is, the impact tool controller must first fit the data to a number of different equations to find the best one that approximates the specific pulse waveform detected for the threaded joint before the controller can determine the torque. The equation fitting process is done in real time, i.e., until the pulse waveform data are collected and the equation fitting process is complete, the actual equation to be used for calculating torque is unknown. This approach takes a number of different fastening process parameters into account (page 11, line 21 – page 12, line 4) to arrive at a more complete conclusion about the pulse waveform. This takes into account that there are variations between fasteners and their tightness after assembly.

Anticipation requires that every limitation of a claim must identically appear in a prior art reference. See *Gechter v. Davidson*, 43 U.S.P.Q. 2d 1030, 1032 (Fed. Cir. 1997). The step of fitting an equation by selecting one mathematical expression from a *set* of mathematical expressions is not identically found in Giardino et al. Absence from the prior art reference of any claimed element negates anticipation. See *Rowe v. Dror*, 42 U.S.P.Q.2d 1550, 1553 (Fed. Cir. 1997).

The Examiner's suggestion that Giardino et al. is "*capable* of having more preprogrammed sets of mathematical torque expressions" does not meet the test for anticipation, which is identity. Moreover, if by "capable" the Examiner means "inherent," neither evidence nor rational is provided to support that assertion. "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency,

however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999). The Examiner has provided no evidence that the step of selecting a mathematical expression from a set of mathematical expressions is necessarily present in Giardino et al.

Therefore, in view of the above, Applicants request reconsideration and withdrawal of the rejection under 35 U.S.C. 102(b), and allowance of independent claims 1, 11 and 21.

Dependent claims 2-10, 12-20 and 22-26 are also believed to be allowable for the same reasons as discussed above. Moreover, these claims recite additional features not found in Giardino et al. For example, claims 2 and 12 recite that the equation/mathematical expression includes a parameter selected from a list of parameters. The passage in Giardino et al. (col. 4, lines 20-25) cited in the Office Action merely references t_f and discloses buffering data so that data points immediately before and after the impulse I are captured, and does not relate to the parameters recited in the claims.

Claim Rejection - 35 U.S.C. § 103(a)

Claims 4-6, 14-16 and 24-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Giardino et al. Applicants submit that a prima facie case of obviousness has not been established with respect to claims 4-6, 14-16 and 24-26 because Giardino et al fails to disclose, teach, suggest or render obvious all of the limitations of independent claims 1, 11 and 21. As discussed above, Giardino et al. fails to disclose, teach or suggest the step of fitting an equation that approximates the time-amplitude waveform of the torque pulse by selecting a mathematical

expression from a set of mathematical expressions. Moreover, nothing in Giardino et al. suggests that it would have been obvious to select the an equation from a set of mathematical expressions. Instead, Giardino et al. teaches that only one equation is needed, as discussed above.

Accordingly, Applicants submit that dependent claims 4-6, 14-16 and 24-26 are allowable for the same reasons as discussed above with respect to claims 1, 11 and 21. Moreover, these claims recite additional features not found in Giardino et al. For example, claims 4, 5, 14, 15, and 25 recite specific equations not found in Giardino et al. Moreover, the no motivation as been suggested for modifying Giardino et al. to use the equations of claims 4, 5, 14, 15, and 25 as required to establish a prima facie case of obviousness.

In view of the foregoing, Applicants believe the application is in condition for allowance. Prompt and favorable treatment is respectfully solicited.

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Please charge any shortage of fees or credit any overpayment thereof to BLANK ROME LLP, Deposit Account No. 23-2185 (119508-00102). In the event that a petition for an extension of time is required to be submitted herewith and in the event that a separate petition does not accompany this report, Applicants hereby petition under 37 C.F.R. §1.136(a) for an extension of time for as many months as are required to render this submission timely. Any fee due is authorized above.

Respectfully submitted,

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